Lewis 2 Wellsite

Sampling and analysis of soil from two soil borings (2 samples) and 4 test pits (9 samples), and surface water samples from three locations at the Lewis 2 Wellsite identified the following:

- ASTM chloride in soil, ethylene glycol, MBAS, VOCs, and SVOCs were not detected in either of the two soil samples from the soil test boreholes;
- Diesel constituents on the PA short list for Diesel were not detected above their respective laboratory reporting limits or their respective SHS R-U MSCs in the 9 samples of soil samples from the test pits;
- No metals were detected above their respective SHS R-U MSCs in any of the soil boring samples;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in any of the three surface water samples;
- VOCs and SVOCs, and the indicator parameter DRO were not detected in surface water samples above the laboratory reporting limit; and
- No constituent was detected in surface water above its surface water quality criteria for human health. No constituent was detected above its surface water quality criteria for aquatic life except total aluminum and total iron in the unfiltered sample from the pond. No other metal or other constituent exceeded its surface water quality criteria, as would have been expected to be observed if these results were attributable to drilling activities. The aluminum and iron observations are consistent with expected variability in sediment and surface water quality. The aluminum and iron observations do not indicate impacts related to Cabot's operations at the Lewis 2 Wellsite.

Teel 5 Wellsite

Sampling and analysis of soil from two soil test borings (2 samples) and surface water samples from three locations (3 samples) at the Teel 5 Wellsite identified the following:

- VOCs and SVOCs, and the indicator parameters ASTM chloride in soil, ethylene glycol, MBAS, were not detected in the two soil samples from the soil test boreholes;
- Arsenic was detected in soil above its SHS R-U MSC in one of the two soil samples analyzed, at a concentration of 14.1 mg/kg. Other metals analyzed were all observed at concentrations less than their respective SHS R-U MSCs.

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- VOCs and SVOCs were not detected in surface water samples above the laboratory reporting limit. Metals were not detected in surface water samples at concentrations above the surface water quality criteria;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in any of the three surface water samples ; and
- The indicator parameter DRO was detected in one surface water sample (upgradient) above the laboratory reporting limit. This finding was for the upstream sample and does not indicate any concern related to the Wellsite.

Teel 6 Wellsite

Sampling and analysis of soil from one test pit (13 samples) and surface water samples from two locations at the Teel 6 Wellsite identified the following:

- Ethylene glycol and regulated petroleum hydrocarbon constituents (combined lists of all PA Short Lists for Petroleum Products) were not detected in any of the 13 soil test pit samples analyzed above the laboratory reporting limit;
- Lead was detected in soil but below its SHS R-U MSC; and
- Constituents on the PA Short List for Diesel were not detected in surface water samples above the laboratory reporting limit.

Teel 7 Wellsite

Sampling and analysis of soil samples from two soil borings (2 samples) and surface water samples at four locations (4 samples) at the Teel 7 Wellsite identified the following:

- ASTM chloride in soil, ethylene glycol, MBAS, VOCs, and SVOCs were not detected in either of the soil boring samples analyzed, with the exception of the VOC acetone (which is a common laboratory contaminant). Acetone was present at concentrations below its SHS R-U MSC;
- Metals detected in soil were at concentrations below their SHS R-U MSC;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in each of the four surface water samples. The pH of the water in one of the wetland samples was outside of (lower than) the range of the surface water quality criteria for aquatic life, but within the range anticipated for a natural wetland environment;
- The indicator parameter DRO and regulated petroleum constituents were not detected in any of the surface water samples above the laboratory reporting limit.

- VOCs and SVOCs were not detected in surface water samples above the laboratory reporting limit, with the exception of bis(2-ethylhexyl) phthalate in one of the samples from the wetland that was detected slightly above the laboratory reporting limit, but did not exceed the surface water quality criteria; and
- No constituents were detected above the surface water quality criteria except total aluminum and total iron in the two samples from the wetlands, which exceeded the surface water quality criteria for aquatic life, and iron in one sample from one of the wetlands, which exceeded the surface water quality criteria for human health. No other metals or other constituents were detected above their surface water quality criteria, as would have been expected had the results been attributable to drilling activities. The aluminum and iron observations are consistent with expected variability in sediment and surface water quality in pond and wetland environments. They do not indicate releases or impacts related to Cabot's operations at the Teel 7 Wellsite.

1.0 INTRODUCTION

URS Corporation (URS) was retained to investigate allegations made by Ex. 6 - Personal Privacy regarding purported environmental impacts to soil and surface water from natural gas drilling operations conducted by Cabot Oil & Gas Corporation (Cabot) in Springville and Dimock Townships, Susquehanna County, Pennsylvania. In response to Ex. 6 - Personal Privacy allegations, Cabot launched an investigation of the conditions and potential environmental impact of those conditions at Wellsites identified by Ex. 6 - Personal Privacy As part of the ongoing investigation, Cabot requested that URS prepare a Work Plan detailing the scope of work designed to evaluate potential environmental issues that may exist, based on Ex. 6 - Personal Privacy representations to Cabot and the Pennsylvania Department of Environmental Protection (PADEP). A Work Plan was developed based on site meetings led by Ex. 6 - Personal Privacy and attended by his attorney (Mr. Paul Schmidt), PADEP (Mike O'Donnell, Eric Rooney, and Sean Robbins), Cabot (Phil Stalnaker and Phillip Hill), Fulbright & Jaworski L.L.P. (Mr. Ken Komoroski and Ms. Amy Barrette), and URS held on Friday, December 18, 2009 and on other information as described in more detail in **Section 4.0** of this report.

This Work Plan was prepared to allow implementation of soil and water studies. These studies were then performed by URS to demonstrate that any releases or incidents alleged by Ex. 6 - Personal Privacy were either confirmed or proven not to have occurred and, to the extent that detectible concentrations of constituents of concern or pollutants were identified, these constituents were either remediated or confirmed to exist below the established action levels. Where appropriate, test pits were excavated by URS to demonstrate that areas were investigated even where Ex. 6 - Personal Privacy was unsure of the precise locations of alleged incidents.

This report summarizes the results of implementation of the Work Plan developed to address allegations by Ex. 6 - Personal Privacy regarding eleven (11) Wellsites in Dimock and Springville Townships, Susquehanna County, Pennsylvania. Based on our investigation of conditions, it was decided to do assessment at two additional Wellsites (W. Chudleigh 1 and Teel 6) unrelated to Ex. 6 - Personal Privacy allegations.

Prior to completion of the Work Plan, URS collected two rounds of water and soil samples near eight (8) of the Wellsites in question. The locations of these samples were based upon information available to URS at the time in relation to Ex. 6 - Personal Privacy allegations.

This report summarizes the results of implementation of the Work Plan developed to address allegations by Ex. 6 - Personal Privacy regarding eleven (11) Wellsites. Other potential releases unrelated to Ex. 6 - Personal Privacy allegations were also investigated regarding two (2) additional Wellsites (the W. Chudleigh 1 and the Teel 6 Wellsites) operated by Cabot in Dimock and Springville Townships, Susquehanna County, Pennsylvania.

Implementation of the Work Plan involved review of previous reports and sampling of soil and surface water in locations where impacts might be expected to be found had the alleged releases occurred, including drilling and sampling of soil from soil borings, excavation of exploratory test pits and sampling of soil, and collection of surface water samples from streams, wetlands, springs, and ponds near the Wellsites.

1.1 OBJECTIVES

The objectives of this investigation included:

- Evaluation of historic reports documenting accidental releases and subsequent reporting, cleanup and Act 2 submittals.
- Evaluation of surface and subsurface soil quality for evidence of impacts that could be attributed to the alleged releases.
- Assessment of the nature of soil and fill on and beneath the surface of the Wellsites for evidence of releases.
- Evaluation of surface water quality for evidence that the alleged releases migrated to or impacted the quality of nearby streams, ponds, and wetlands.
- Review and interpretation of the findings of soil and surface water sampling and analysis relative to the various environmental quality standards promulgated for the specific media sampled.

2.0 SCOPE OF WORK PERFORMED

URS investigated soil and surface water quality, in varying combinations, at each of 11 Wellsites in response to allegations made by Ex. 6 - Personal Privacy that various natural gas well drilling fluids and petroleum products were released to the environment and 2 additional Wellsites based on other information as described in more detail in **Section 4.0** of this report. The Wellsites and pad areas included in this investigation are listed below:

- Black 1H
- Brooks 1H
- W. Chudleigh 1
- Costello 1
- Ely 1H/5H/7H SE
- Ely 2
- Ely 4/6H
- Gesford 2/7H NW
- Gesford 3/9
- Lewis 2
- Teel 5
- Teel 6
- Teel 7

A variety of analytical suites were assigned to each Wellsite investigation based on the nature of the purported releases in order to confirm or refute the presence of the allegedly released substances. Regulated metals and organic compounds were analyzed in addition to a series of indicator parameters that could be attributable to the fluids alleged to have been released. For example, hydraulic fracturing fluids have surfactants added; therefore, analysis for the presence of surfactants (MBAS) as an indicator parameter was performed where such fluids were purported to have been released as an indicator parameter. It should also be noted that MBAS can be associated with other human activities and can also be naturally-occurring. The target analytes are not all regulated with a Medium Specific Concentration (MSC) for human health risk or cleanup; however, each is considered to be an indicator parameter the presence of which at or above threshold concentrations could

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APPENDICES

EXECUTIVE SUMMARY

URS Corporation (URS) was retained to investigate allegations made by Ex. 6 - Personal Privacy regarding environmental impacts to soil and surface water from natural gas drilling operations conducted by Cabot Oil & Gas Corporation (Cabot) in Springville and Dimock Townships, Susquehanna County, Pennsylvania. In response to Ex. 6 - Personal Privacy allegations, Cabot launched an investigation of the conditions and potential environmental impact of those conditions at well sites identified by Ex. 6 - Personal Privacy. A Work Plan was developed based on site meetings led by Ex. 6 - Personal Privacy and attended by his attorney (Mr. Paul Schmidt), the Pennsylvania Department of Environmental Protection (PADEP) (Mike O'Donnell, Eric Rooney, and Sean Robbins), Fulbright & Jaworski L.L.P. (Mr. Ken Komoroski and Ms. Amy Barrette), Cabot (Phil Stalnaker and Phillip Hill), and URS (James Pinta, Jr.), held on Friday, December 18, 2009.

This Work Plan was prepared to allow implementation of soil and surface water studies. These studies were then performed by URS to demonstrate that any releases or incidents alleged by Ex. 6 - Personal Privacy were either confirmed or proven not to have occurred and, to the extent that detectible concentrations of constituents of concern or pollutants were identified, these constituents were either remediated or confirmed to exist below the established action levels. Where appropriate, test pits were excavated by URS to demonstrate that areas were investigated even where Ex. 6 - Personal Privacy was unsure of the precise locations of alleged incidents.

This report summarizes the results of implementation in late 2009 and 2010 of the Work Plan developed to address allegations by Ex. 6 - Personal Privacy regarding eleven (11) Wellsites in Dimock and Springville Townships, Pennsylvania. Based on our investigation of conditions, it was decided to do assessment at two additional Wellsites (W. Chudleigh 1 and Teel 6) unrelated to Ex. 6 - Personal Privacy allegations.

The investigation observed detectible concentrations of various constituents in the vicinity of some of the Wellsites investigated. These observations are not surprising and are anticipated with any investigation. Overall, metals were the most commonly detected of the constituents in soil, groundwater, and surface water samples. The most common naturally-occurring mineral-forming metals such as aluminum, iron, manganese, magnesium, potassium, and sodium were identified in the majority of samples. The presence of these

metals are indicative of the normal mineral content of the soil, groundwater, and surface water sampled and do not provide evidence of a release.

For soil, no constituent was detected above its respective Statewide Health Standard (SHS) residential, used-aquifer (R-U) Medium-Specific Concentration (MSC), except for manganese in a few isolated soil samples, and arsenic in soil. However, these Wellsites meet PADEP's standards under Act 2 for manganese and arsenic. Arsenic concentrations were within the range of naturally-occurring background concentrations observed in the area. Arsenic was detected above its SHS R-U MSC sporadically across the study area, both in soil and fill materials used to construct Wellsites. Arsenic or arsenic-based compounds are not known to be used in drilling or hydraulic fracturing or in substances that are alleged by [redacted] to have been released at the various Wellsites evaluated. The range of arsenic concentrations detected is narrow, with no soil sample showing arsenic above 42.6 mg/kg. Prior studies of naturally occurring arsenic in soil performed by Cabot in Dimock and Springville Townships have shown that the natural background concentration of arsenic has been up to 236 mg/kg. Arsenic at the observed concentrations is representative of the range of native content in soil and bedrock in the study area and within the naturally-occurring background concentrations in the area of these Wellsites. The observed arsenic concentrations are, therefore, due to the presence of naturally-occurring minerals in the soil and sediment of the region.

This study also involved analyses for a variety of indicator parameters in soil and surface water that, although not regulated (there is not an established MSC under Act 2), could indicate releases from the natural gas industry operations conducted at these Wellsites. These "indicator parameters" include chloride (chloride in a water leachate from soils according to American Society for Testing and Materials (ASTM) standard D3987-85 (ASTM chloride in soil)), Methylene Blue Active Substances (MBAS – surfactants), ethylene glycol, diesel range organics (DRO), and other indicator parameters listed in **Appendix A, Table 2**, page 5. These parameters were not commonly present in soil or surface water at the Wellsites evaluated. Of the 13 Wellsites studied, one or more of these indicator parameters were detected at six. MBAS were detected in soil at Black 1H, Brooks 1H, Ely 1H/5H7H, and Gesford 2/7H NW. Either DRO or regulated diesel constituents were detected in soil at Brooks 1H, Ely 4/6H, Gesford 2/7H NW and Gesford 3/9. DRO were detected in surface water at one Wellsite (Teel 5), but in the upstream sample relative to this Wellsite.

URS also collected twenty-four samples of surface water in the vicinity of each of the Wellsites. The results were compared to numeric concentrations adopted by PADEP under Pennsylvania's surface water quality criteria. PADEP uses the surface water quality criteria to evaluate, based on data collected over time and in multiple locations in accordance with the State monitoring plan, whether surface water in the State supports various aquatic and human uses. No constituent was detected above the surface water quality criteria except for aluminum and iron, which were detected above the surface water quality criteria for aquatic life in seven of twenty-four unfiltered samples collected at different locations in the vicinity of nine of the thirteen sites. Dissolved iron was detected above the surface water quality criteria for human health in one sample collected from a wetland in the vicinity of one site. No other constituents were detected above the surface water quality criteria, as would have been expected if the observations were attributable to drilling activities.

The observed range of concentrations of aluminum and iron in surface water samples collected from streams in the vicinity of the Wellsites is consistent with expected variability in sediment and surface water quality for streams near the study area, as reflected in data collected by the U.S. Geological Survey (USGS). Concentrations of total aluminum and total iron observed in wetland environments and ponds sampled as part of this investigation observed total aluminum and total iron concentrations that range higher than in the streams sampled, but are still within the anticipated range of concentrations for the pond and wetland environments, where aluminum and iron concentrations vary widely due to a variety of naturally-occurring detritus and humic material that collects in areas of standing water and variables such as depth, rainfall, use, turbidity, and water chemistry. The observed results do not indicate a release or impacts to streams, ponds or wetlands related to Cabot's drilling activity at any Wellsite, as discussed in more detail in Section 4 of this report.

The results of sampling and analysis of soil from soil borings and test pits, as well as surface water samples, are summarized by individual Wellsite below.

Black 1H Wellsite

Sampling and analysis of soil from two soil borings (2 samples) and 12 surface soil locations (12 samples), and surface water samples from two locations (2 samples) at the Black 1H Wellsite identified the following:

- Low levels (less than 1 mg/l) of the indicator parameter MBAS were observed in subsurface soil at this Wellsite in one of two samples. MBAS could be indicative of either naturally occurring or man-made surfactants;
- Metals detected in soil were observed at concentrations below their SHS R-U MSCs;
- No volatile Organic Compounds (VOCs) or Semi-Volatile Organic Compounds (SVOCs) were detected in soil above their respective SHS R-U MSCs; and
- Surface water sampling in 2008 shortly after the suspected release detected metal constituents as total recoverable in concentrations higher than the surface water quality criteria. However, as of late 2009, no constituent was detected in the two surface water samples above the surface water quality criteria except for total aluminum in one of the two downgradient, unfiltered samples, which was very slightly higher than the surface water quality criteria for aquatic life. These observations are consistent with expected variability in sediment and surface water quality. They do not indicate current surface water impacts at the Black 1H Wellsite.

URS later installed three groundwater monitoring wells and sampled them in November 2010, March 2011, June 2011, and August 2011. The results of the quarterly sampling for a one-year period demonstrate attainment of the SHS R-U MSC for groundwater at the downgradient point of compliance (MW-1) under Act 2. Results of confirmational soil sampling and groundwater monitoring in 2010 and 2011, as well as surface water sampling done shortly after the suspected release, are reported separately in a Remedial Investigation and Final Report ("Final Report") on this Wellsite submitted to PADEP by Cabot with this report.

The 2010-2011 groundwater findings detailed in the Final Report are summarized below:

- As is typical in groundwater sampling, total and dissolved metals were detected in most groundwater collected. Concentrations of all constituents were below their respective MSCs at the point of compliance ("POC") well, demonstrating attainment of the SHS R-U MSCs; and
- No TCL VOCs or TCL SVOC were detected in groundwater samples at concentrations above their respective SHS R-U MSCs for all samples.

URS also conducted confirmational sampling to evaluate for soil impacts in the area of the seep. Arsenic and manganese in soil downhill from the well pad both exceeded their respective SHS R-U MSC in two of 12 randomly-located samples. These findings

demonstrate attainment of the SHS R-U MSCs under the 75%-10X Rule (PA Title 25, §250.707(b)(1)(i)) for arsenic and manganese. Random sampling locations were determined using PADEP's systematic random sampling protocol.

Brooks 1H Wellsite

Sampling and analysis of soil from 9 test pits (18 samples) and surface water samples from two locations (2 samples) at the Brooks 1H Wellsite identified the following:

- MBAS (one sample) and DRO (two samples) were detected in three of the 18 samples analyzed; however, these constituents are indicator parameters and as such, are not regulated (there is not an established MSC under Act 2). The regulated petroleum constituents in samples exhibiting DRO were present below the respective SHS R-U MSCs;
- SVOCs were not detected above their respective SHS R-U MSCs;
- None of the VOCs, SVOCs, and petroleum hydrocarbons were detected in surface water samples, and no metals were detected their respective surface water quality criteria; and
- Chloride and total dissolved solids (TDS) were not detected in either surface water sample at concentrations above surface water quality criteria.

W. Chudleigh 1 Wellsite

- Sampling and analysis of soil from two soil borings (2 samples) and surface water samples from two locations (2 samples) at the W. Chudleigh 1 Wellsite identified that none of the constituents analyzed under the Pit/Frac Suite of compounds (**Appendix A – Table 2**) were present in either the soil at concentrations above their respective applicable SHS R-U MSCs or the surface water at concentrations above the relevant water quality criteria. The Pit/Frac Suite of Compounds was developed with input from PADEP to investigate the potential for the content of drill pits or hydraulic fracturing fluids to have been released into the environment.
- No constituent was detected in surface water above its respective surface water quality criteria for human health. No constituent was detected above its respective surface water quality criteria for aquatic life except total aluminum and total iron in an unfiltered, downgradient stream sample. These observations are consistent with expected variability in sediment and surface water quality. They do not indicate

releases or surface water impacts related to Cabot's operations at the W. Chudleigh 1 Wellsite.

Costello 1 Wellsite

Sampling and analysis of soil from two soil borings (2 samples) and surface water samples from two locations (2 samples) at the Costello 1 Wellsite identified the following:

- Indicator parameters DRO, MBAS, and ethylene glycol were not detected in any of the soil or surface water samples analyzed;
- VOCs and SVOCs were not detected in soil above their respective SHS R-U MSCs. No VOCs or SVOCs were detected in surface water samples above the laboratory reporting limit;
- Arsenic was present at 12.5 mg/kg in one of the two samples analyzed above its SHS R-U MSC of 12 mg/kg, which is within the range of naturally-occurring arsenic for soils. The remainder of the metals analyzed were not detected in soil above their respective SHS R-U MSCs.
- No constituent was detected in surface water above the human health-based surface water quality criteria for human health. No constituent was detected above its respective surface water quality criteria for aquatic life except total aluminum and total iron in the unfiltered sample from the pond. No other metal or other constituent was detected above the surface water quality criteria, as would have been expected to be observed had these observations been attributable to drilling activities. The aluminum and iron observations are consistent with expected variability in sediment and surface water quality. These observations do not indicate releases or surface water impacts related to Cabot's operations at the Costello 1 Wellsite; and
- Chloride and TDS were not detected in either surface water sample at concentrations their respective surface water quality criteria.

Ely 1H/5H/7H SE Wellsite

Sampling and analysis of soil from four soil test borings (4 samples) and four test pits (8 samples) at the Ely 1H/5H/7H SE Wellsite identified the following:

- For the soil samples for the soil test boreholes:
  - Indicator parameters MBAS and ASTM chloride in soil were not detected in three of the four soil samples. In the fourth soil sample, results for both parameters

were only slightly above the laboratory reporting limits; therefore, in conjunction with the other data collected, are not considered to be a concern;

- Ethylene glycol was not detected above the laboratory reporting limit;
- The VOCs acetone, methyl ethyl ketone (2-butanone), and toluene were detected in soils below their respective SHS R-U MSCs. The SVOC m&p-cresols was detected above the laboratory detection limit, but below its SHS R-U MSC. No other SVOCs were detected in the soil samples from the soil test boreholes.
- No metals were detected in soil samples at concentrations above their respective SHS R-U MSCs.

- For the soil samples from the four test pits (8 samples), all analytes for parameters on the PA Short List for Diesel (**Appendix A – Table 2**) were not detected above the laboratory reporting limit.

Ely 2 Wellsite

Sampling and analysis of soil from two soil test boreholes (2 samples) and surface water samples from two locations at the Ely 2 Wellsite identified the following:

- MBAS and ASTM chloride in soil were not detected in either of the two soil samples analyzed;
- Ethylene glycol was not detected in soil in either of the samples analyzed;
- The VOCs acetone, methyl ethyl ketone (2-butanone), and toluene were detected in soil below their respective SHS R-U MSCs. No SVOCs were detected in either soil sample. No VOCs or SVOCs were detected in surface water;
- Arsenic was present in the two samples analyzed (19.6 and 15.4 mg/kg) above its SHS R-U MSC of 12 mg/kg, which is within the range of naturally-occurring arsenic for soils in the area. Other metals detected in soil were all observed at concentrations less than their respective SHS R-U MSCs; and
- No constituent was detected in surface water above its surface water quality criteria for human health. No constituent was detected above its surface water quality criteria for aquatic life except total aluminum and total iron in the unfiltered downgradient stream sample. No other metals or other constituents exceeded its surface water quality criteria, as would have been expected to be observed if these results were attributable to drilling activities. The aluminum and iron observations are consistent with expected variability in sediment and surface water quality. They do not indicate impacts related to Cabot's operations at the Ely 2 Wellsite.

Ely 4/6H Wellsite

Sampling and analysis of soil from 7 test pits (14 samples) and three surface water samples from two locations at the Ely 4/6H Wellsite identified the following:

- ASTM chloride in soil was detected in four of the 14 soil samples analyzed; however, this parameter is not regulated in soils, and there is not an established MSC under Act 2. Neither chloride nor TDS were detected in surface water above the surface water quality criteria. The concentrations of ASTM chloride in soil observed would not be expected to impact nearby surface waters or groundwater;
- Indicator parameters ethylene glycol and MBAS were not detected in soil;
- The indicator parameter DRO was detected in five of the 14 samples analyzed. However, analysis of the samples for the PA Short List for Diesel shows that none of these compounds were present in the soil samples at concentrations above their respective SHS R-U MSCs;
- No SVOCs were detected in soil samples above their respective SHS R-U MSCs;
- VOCs and SVOCs, and the indicator parameters ethylene glycol, MBAS and DRO, were not detected in surface water samples above the laboratory reporting limit. No metals or chloride were detected in surface water samples were at concentrations above the surface water quality criteria; and
- The pH of two of the three surface water samples was outside of (lower than) the range of the surface water quality criteria for aquatic life. The field duplicate for the seep sample had a pH within the surface water quality criteria, showing that this condition is variable and within the range expected for this water body.

Gesford 2/7H NW Wellsite

Sampling and analysis of soil from 16 test pits (33 samples) at the Gesford 2/7H NW Wellsite identified the following:

- ASTM chloride in soil was detected in seven of the 33 soil samples analyzed; however, this parameter is not regulated in soils, and there is not an established MSC under Act 2.
- Indicator parameter MBAS was detected in soil in one of the samples analyzed. No impact to nearby surface or groundwater could be expected as a result of this detection;

- Arsenic was detected above its SHS R-U MSC in 28 of the 33 samples analyzed, with a maximum observed concentration of 42.6 mg/kg, which is within the range of naturally-occurring arsenic for soil in the area. The remaining metals analyzed were all at concentrations less than their respective SHS R-U MSCs in all samples; and
- VOCs and SVOCs analyzed were not detected in soil at concentrations above their respective SHS R-U MSCs.

Gesford 3/9 Wellsite

Sampling and analysis of soil from five soil borings (6 samples) and six soil test pits (13 samples) and surface water samples from two locations at the Gesford 3/9 Wellsite identified the following:

- Indicator parameters ASTM chloride in soil, ethylene glycol, and MBAS were not detected in any of the six soil boring samples analyzed;
- Arsenic was detected in soil above its SHS R-U MSC in each of the six soil samples from the soil borings, with a maximum observed concentration of 35.6 mg/kg, which is within the range of naturally-occurring arsenic for soil. Manganese ws detected above its SHS R-U MSC in one of six samples. All other metals analyzed were all observed at concentrations less than their respective SHS R-U MSCs for all samples;
- The VOCs detected were present at concentrations below their respective SHS R-U MSCs. No SVOCs were present at concentrations above their respective SHS R-U MSCs;
- Potential constituents on the PA Short List for Diesel were detected in both soil samples from one test pit (P1) at concentrations below their respective SHS R-U MSCs; however, these constituents were not detected in any of the remaining ten soil samples from the surrounding test pits;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in either surface water sample;
- VOCs and SVOCs, and the indicator parameter DRO were not detected in surface water samples above the laboratory reporting limit; and
- Metals were not detected in surface water samples at concentrations above their respective surface water quality criteria.

Lewis 2 Wellsite

Sampling and analysis of soil from two soil borings (2 samples) and 4 test pits (9 samples), and surface water samples from three locations at the Lewis 2 Wellsite identified the following:

- ASTM chloride in soil, ethylene glycol, MBAS, VOCs, and SVOCs were not detected in either of the two soil samples from the soil test boreholes;
- Diesel constituents on the PA short list for Diesel were not detected above their respective laboratory reporting limits or their respective SHS R-U MSCs in the 9 samples of soil samples from the test pits;
- No metals were detected above their respective SHS R-U MSCs in any of the soil boring samples;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in any of the three surface water samples;
- VOCs and SVOCs, and the indicator parameter DRO were not detected in surface water samples above the laboratory reporting limit; and
- No constituent was detected in surface water above its surface water quality criteria for human health. No constituent was detected above its surface water quality criteria for aquatic life except total aluminum and total iron in the unfiltered sample from the pond. No other metal or other constituent exceeded its surface water quality criteria, as would have been expected to be observed if these results were attributable to drilling activities. The aluminum and iron observations are consistent with expected variability in sediment and surface water quality. The aluminum and iron observations do not indicate impacts related to Cabot's operations at the Lewis 2 Wellsite.

Teel 5 Wellsite

Sampling and analysis of soil from two soil test borings (2 samples) and surface water samples from three locations (3 samples) at the Teel 5 Wellsite identified the following:

- VOCs and SVOCs, and the indicator parameters ASTM chloride in soil, ethylene glycol, MBAS, were not detected in the two soil samples from the soil test boreholes;
- Arsenic was detected in soil above its SHS R-U MSC in one of the two soil samples analyzed, at a concentration of 14.1 mg/kg. Other metals analyzed were all observed at concentrations less than their respective SHS R-U MSCs.

- VOCs and SVOCs were not detected in surface water samples above the laboratory reporting limit. Metals were not detected in surface water samples at concentrations above the surface water quality criteria;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in any of the three surface water samples ; and
- The indicator parameter DRO was detected in one surface water sample (upgradient) above the laboratory reporting limit. This finding was for the upstream sample and does not indicate any concern related to the Wellsite.

Teel 6 Wellsite

Sampling and analysis of soil from one test pit (13 samples) and surface water samples from two locations at the Teel 6 Wellsite identified the following:

- Ethylene glycol and regulated petroleum hydrocarbon constituents (combined lists of all PA Short Lists for Petroleum Products) were not detected in any of the 13 soil test pit samples analyzed above the laboratory reporting limit;
- Lead was detected in soil but below its SHS R-U MSC; and
- Constituents on the PA Short List for Diesel were not detected in surface water samples above the laboratory reporting limit.

Teel 7 Wellsite

Sampling and analysis of soil samples from two soil borings (2 samples) and surface water samples at four locations (4 samples) at the Teel 7 Wellsite identified the following:

- ASTM chloride in soil, ethylene glycol, MBAS, VOCs, and SVOCs were not detected in either of the soil boring samples analyzed, with the exception of the VOC acetone (which is a common laboratory contaminant). Acetone was present at concentrations below its SHS R-U MSC;
- Metals detected in soil were at concentrations below their SHS R-U MSC;
- Chloride and TDS were not detected at concentrations above their respective surface water quality criteria in each of the four surface water samples. The pH of the water in one of the wetland samples was outside of (lower than) the range of the surface water quality criteria for aquatic life, but within the range anticipated for a natural wetland environment;
- The indicator parameter DRO and regulated petroleum constituents were not detected in any of the surface water samples above the laboratory reporting limit.

- VOCs and SVOCs were not detected in surface water samples above the laboratory reporting limit, with the exception of bis(2-ethylhexyl) phthalate in one of the samples from the wetland that was detected slightly above the laboratory reporting limit, but did not exceed the surface water quality criteria; and
- No constituents were detected above the surface water quality criteria except total aluminum and total iron in the two samples from the wetlands, which exceeded the surface water quality criteria for aquatic life, and iron in one sample from one of the wetlands, which exceeded the surface water quality criteria for human health. No other metals or other constituents were detected above their surface water quality criteria, as would have been expected had the results been attributable to drilling activities. The aluminum and iron observations are consistent with expected variability in sediment and surface water quality in pond and wetland environments. They do not indicate releases or impacts related to Cabot's operations at the Teel 7 Wellsite.